5. PROGRAMMING ASSIGNMENT 5
Read:        Chapter 10 Pointers (SKIP pg 239-252,258-274)
Programming: Name your program p5.c
DUE:        Saturday, November 11, 2017 @ 6am
Write a program using pointers and functions to convert to lowercase and rotate 4
text grades.  A backwards circular rotate is performed on the 4 characters.
See sample output below. e.g. A B C D --> B C D A

a) Use constant types to help readability of your code e.g. #define a 'a'
b) Your program must loop so that the user can continue to generate and view the
output until the user responds with 'n' or 'N' to the offer "Want to rotate more
grades?".  Therefore main() accepts all input.  NOTE:  Your program will end ONLY
with the input of a 'n' or 'N'.
c) Write 2 functions besides main().  main() will call (invoke) the 2 functions.
The declarations are:  void rotate(char *p1, char *p2, char *p3, char *p4);
     void lowercase(char *p);
d) main() will allow the user to input the 4 characters for the grades.  Each grade
must be a value of A, B, C, D, or F.  Notice if ANY grade is invalid, then ALL
scores are input again until valid input is received.

Hint: REMEMBER the space between each input letter!

```
printf ("Enter 4 letter grades to rotate: ");
scanf("%c %c %c %c", &c1, &c2, &c3, &c4); // Read <Enter> key
getchar(); // Read <Enter> key
lowercase(&c1); // Pass address of cl to convert .
printf ("Want to rotate more grades? ");
answer = getchar(); // Read <Enter> key
getchar();
} while ( /* Exit on 'n' or 'N' */);
```
e) rotate() will rotate the 4th value to the 3rd position, the 3rd value to the 2nd
position, and the 2nd value to the 1st position, and the 1st to the 4th position.
Call rotate() four times in main() using a loop.
f) lowercase() will convert the parameter to lowercase.  Helpful to use " #include
<ctype.h> " and “isupper();” and “tolower();” Refer to page 473 in textbook.

HINT: Solve this problem in small steps.  Here’s a suggestion.
1) Type in code for input steps a), b), c).
2) Type in POINTERS handout code for swap().  Rename swap() to “rotate()” for step
e). Call rotate() once without any “if statement”, pass 4 addresses and modify code
within the rotate() function.  Write lowercase().  Test.  Done!

PA#5 SAMPLE OUTPUT (SAMPLE INPUT is typed in bold below)

```
Enter 4 letter grades to rotate: A B C d
Input Grades: a b c d
Grades Rotated #1: b c d a
Grades Rotated #2: c d a b
Grades Rotated #3: d a b c
Grades Rotated #4: a b c d
Want to rotate more grades? y

Enter 4 letter grades to rotate: f E E d
ERR: Grade is out of range(a-d,f)!

Enter 4 letter grades to rotate: F D F F
Input Grades: f d f f
Grades Rotated #1: d f f f
Grades Rotated #2: f f f d
Grades Rotated #3: f f d f
Grades Rotated #4: d f f f
Want to rotate more grades? N
```

Submit the final version of your program as p5.c  Verify you
SAVED your work in the Documents - cs5f HOME directory.